

1 IN THE CLAIMS

2 CLAIMS

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18 (New) 132. A process for treating wood having wood cellulose having a plurality of hydroxyl
19 groups comprising the steps of:

20 providing a solution comprised of:

21 a solute compound having a plurality of functional groups wherein each of
22 which functional group includes;

23 an atom selected from the group consisting of tetravalent atoms, wherein said atom

1 is bonded to a halogen atom or a functional group selected from the group consisting of a
2 hydroxyl group, alkoxy group, phenoxy group, benzyloxy group, an aryloxy group having a
3 polycyclic aromatic ring, and combinations thereof; and
4 at least one acid catalyst;
5 applying said solution to the wood cellulose, and
6 an organic solvent allowing a solute compound to be drawn from the
7 solute to the wood by an acid generating reaction within the wood;
8 reacting said functional groups to form covalent bonds with other
9 functional groups of said solute and to said wood cellulose and wherein the acid catalyst is
10 produced by a molecule producing an acid after the application to water in the wood cellulose.

11 (New)133. The process according to claim 132 further comprising the step of reacting said
12 solute compound functional groups only upon contact with the wood cellulose or water in
13 wood cellulose.

14 (New) 134. The process according to claim 133 further comprising the steps of simultaneous
15 reaction and diffusion of the functional groups in the wood and a heat generating reaction of
16 said functional groups upon application to the wood to form covalent bonds with other
17 functional groups of said solute and to said wood cellulose.

18 (New) 135. The process of claim 134 wherein the acid catalyst comprises a substance which
19 reacts with water in the wood to generate acid in a heat generating reaction so that the functional
20 groups bonds from the, tetravalent atom across an oxygen of the cellulose hydroxyl group.

21 (New) 136. The process of claim 135 wherein the acid catalyst is added to the wood
22 cellulose after application of said solution to the wood cellulose.

23 (New) 137. The process of claim 135 wherein the acid catalyst is added to the solution

1 prior to application of the solution to the wood cellulose.

2 (New)138. The process of claim 132 wherein the acid catalyst is in the range of 0.05-10%

3 of the solution.

4 (New) 139. The process of claim 138 wherein the acid catalyst is in the range of 0.05-4.9%

5 of the solution.

6 (New) 140. The process of claim 132 wherein the acid catalyst is strong acid.

7 (New) 141. The process of claim 140 wherein the acid catalyst has a pKa below 2.5

8 (New) 142. The process of claim 132 wherein the acid catalyst is in the range of .01-10%

9 in situ the wood.

10 (New) 143. The process of claim 132 wherein the acid catalyst is a molecule

11 comprised of silicone and a halogen.

12 (New) 144. The process of claim 132 wherein the concentration of organic solvents is in

13 the range from 0-20%.

14 (New) 145. The process of claim 144 wherein the percentage of organic solvents is in a

15 range of 0 to 10%.

16 (New) 146. The process of claim 132 wherein the organic solvent is at a concentration of

17 at least 10% of the solution.

18 (New) 147. The process of claim 145 wherein organic solvents are at a concentration of

19 30%-99.9% of the solution.

20 (New) 148. The process of claim 132 wherein the organic solution is less than 20%

21 oligomers of the functional groups prior to applying the solution to the wood.

22 (New) 149. The method of claim 132 wherein the organic solvent is an organic solvent

23 a (K_{ow}) less than 10.0.

1 (New) 150 The method of claim 149 wherein the organic solvent is an organic solvent with a
2 (K_{ow}) less than 1.0.

3 (New) 151. The method of claim 150 wherein the organic solvent is an organic solvent
4 with a (K_{ow}) less than 0.

5 (New)152. The process of claim 132 further comprising the step of:
6 adding at least one non-reactive additive to the wood cellulose that enhances a desired
7 property selected from the group consisting of:

- 8 (1) fire resistance,
- 9 (2) insect resistance,
- 10 (3) moisture resistance
- 11 (4) color,
- 12 (5) adhesion,
- 13 (6) insulation, and
14. (7) combinations thereof.

15 (New) 153. The process of claim 152 wherein the step of adding at least one non-reactive
16 additive further comprises adding the additive to the solution.

17 (New) 154. The process of claim 152 wherein the step of adding the at least one non-reactive
18 additive occurs before reacting the functional groups to bond with the wood cellulose

19 (New)155. The process of claim 152 wherein the additive is from the group
20 consisting of:

- 21 1) diatomaceous earth,
- 22 2) sodium silicates,
- 23 3) boron salts,

- 1 4) boric acid,
- 2 5) trimethy borate,
- 3 6) Boron Halides,
- 4 7) Boric Anhydride,
- 5 8) phosphorous compounds,
- 6 9) copper compounds,
- 7 10) metal alkoxide,
- 8 11) meta-phosphoric acid;
- 9 12) phosphoric acid,
- 10 13) metaphoshoric acid,
- 11 14) silicone salts
- 12 15) trialkyl borate
- 13 16) boron oxide, and
- 14 17) combinations thereof.

15 (Previously Presented) 156. The process according to claim 132, wherein the wood cellulose has
16 an original weight and wherein the duration of treatment attains a weight of compound which is
17 covalently bonded to the wood cellulose having a range of 0.1 to 10 weight percent of the original
18 weight of the wood cellulose.